Knowledge Management Strategy

GOVERNMENT OF THE
NORTHWEST TERRITORIES

Prepared by

Informatics
Policy Committee

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Northwest
Territories

Knowledge Management Strategy

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Knowledge Management Strategy

Executive Summary

The government is committed to improving the delivery of programs and services to residents of the Northwest Territories. Many challenges must be overcome as the government strives for this result.

Many organizations now recognize that knowledge is an asset and must be managed. Simply put, knowledge management is the process of getting the right information to the right people at the right time with minimum effort.

Knowledge Management involves:

- Gathering data about observable facts on topics of interest
- Arranging the data into meaningful patterns to provide information
- Knowing how to apply the information to solve a problem – the use of knowledge

To elaborate, knowledge management is a process with which an organization captures, organizes and manages its knowledge assets. Such assets typically include both explicit knowledge (that which is already "written" e.g. manuals, processes etc.) and tacit knowledge (the knowledge that only exists in employees' heads).

Most organizations are familiar with the acquisition of data and its transformation into information. The concepts of information management are well established. Knowledge management however, requires a significant change in the way employees and managers both view and deal with knowledge. Bringing about this cultural change requires considerable skill and effort.

Knowledge Management Strategy

Information technology (IT) is the tool of choice to make knowledge management easier. Before knowledge management can be implemented in a large, complex organization such as the GNWT, a means of managing IT well must be in place.

Within the GNWT, the Informatics Policy Committee (IPC) has been given by the Financial Management Board (FMB) responsibility for corporate information and information technology management. The IPC, which is composed of the Deputy Ministers from several major departments, recently reviewed the government's current way of managing information technology and found it was dated and failed to meet the overall needs of the GNWT.

In the GNWT, the management of information technology is highly decentralized and the technology infrastructure is composed of a wide variety of hardware, software and telecommunication products. As a result, IT management suffers from the following disadvantages:

- There is considerable duplication of effort
- Economies of scale are not being achieved
- The IT environment is inefficient and overly costly to support
- It is difficult and time consuming to obtain accurate, corporate-level information
- There are technological and organizational barriers to the exchange of information, within privacy constraints, across the GNWT
- The IT environment is not effectively structured to support future electronic service delivery (ESD) initiatives

Through the development of a Knowledge Management Strategy, the IPC concluded that the government's technology infrastructure must be standardized and IT initiatives must be undertaken with a broader vision to improve the use of information within the GNWT and the delivery of services to residents of the Northwest Territories.

The Knowledge Management Strategy is a three-year plan to put the building blocks in place for effective, government-wide, knowledge management.

Knowledge Management Strategy

Through the implementation of the Strategy, six major issues will be addressed:

1. The effectiveness of organizational roles and responsibilities respecting information technology and knowledge management

2. Required improvements to existing computer systems

3. The requirement for integrated, cross-government knowledge management plans

4. The need for standardization and improved management of technology infrastructure

5. The development of a security framework and guidelines to protect the IT and knowledge assets, and support the protection of privacy

6. The development of an evaluation framework to measure improvements and guides adjustments to the Strategy as required

Four, key first steps were identified to begin implementation of the strategy:

1. Establishment of an Office of the Chief Information Officer (CIO) to provide cross-government leadership in the management of the information technology infrastructure and the introduction of knowledge management

2. Strengthening the role of the departments as the owners of systems and as managers of their information and knowledge content

3. Extension of the use of government-wide systems for functions that are common to a number of departments, and clear assignment of responsibility for government-wide systems to the department with leadership responsibility for the corresponding function

4. Establishment of a Technology Services Center to cost effectively support the GNWT technology infrastructure

Implementation of these first four steps is expected to span three fiscal years, 2001/02 through 2003/04, and provide the foundation for knowledge management within the GNWT.

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Knowledge Management Strategy

Introduction

The acquisition of knowledge is expanding at an unprecedented rate. A few decades ago, the body of knowledge doubled once every 50 years; now it doubles every 12 to 18 months. It is becoming increasingly difficult and in some cases impossible for an individual to remain up-to-date in his or her area of knowledge. For organizations, keeping knowledge current and managing that knowledge is a constant challenge.

Information technology plays a critical role in managing knowledge as it is the tool of choice for storing and manipulating data to form information, and for storing and maintaining explicit knowledge, that is, knowledge that is packaged, communicable, transferable and can be expressed in formal, shared language.

On July 7, 2000 the members of the Informatics Policy Committee of the Government of the Northwest Territories launched a Knowledge Management Strategy (KMS) project. This was to address the need to use information technology to promote and support the effective and efficient delivery of government programs and services to Northerners and, within available resources, seek opportunities to extend the benefits of information technology to the Northern public.

Consultation Process

During the information-gathering phase of the KMS development project, stakeholders were consulted through interviews, presentations and feedback sessions, and focus groups. The stakeholders included politicians, deputy ministers, system users, directors of finance and administration, GNWT information technology practitioners and external technology service providers.

The consultations explored:

- The degree to which there are standards and commonly followed practices for the use of technology in the GNWT
- The value placed on information in the organization and the degree to which people have confidence in the accuracy, currency and comprehensiveness of information
- Government-wide practices for the creation, filing and disposal of government records

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- The impact technology has had on people in the GNWT – both system users and IT practitioners
- The extent to which technology has enabled service delivery, including electronic service delivery and knowledge management
- Perceptions regarding readiness for a knowledge management strategy

The findings from the first phase of the KMS project confirmed that the technology environment in the GNWT is highly decentralized, with a departmental focus. While this approach serves individual departmental needs, cross-government exchange of information is difficult. Departments usually only collaborate on IT matters to address immediate operational requirements. This has resulted in lost opportunities for the production of government-wide data for information sharing and for coordinated service delivery. It has also resulted in considerable duplication.

Opportunities exist to increase collaboration, break down departmental silos and reduce support costs. A professionally managed information technology function should support the achievement of GNWT business goals and move the GNWT towards an environment in which knowledge management can thrive.

Knowledge Management Strategy

Knowledge Management

This document maps out a strategy that will enable the GNWT to provide services that will be more efficient, customer-driven, user-friendly and informative. The GNWT, like governments elsewhere, is facing a number of challenges:

- The need to use resources to best advantage, including technology, to foster the economic well being of NWT residents
- The shift to a customer-driven organization where being relevant to the needs of customers (both residents and businesses) drives the need for programs and services accessible in ways most convenient to the customer
- The expectation that governments will adopt best practices
- The diminishing importance of geography and physical location as people and communities become more connected through the benefits of technology
- The desire to capture and share organizational knowledge as a means towards capacity building of northern people

To manage knowledge, deliberate efforts must be made. The efforts must be well planned and carefully coordinated. The GNWT vision for the use of IT, the principles that have been developed, and the knowledge management framework provide the guidelines, which are intended to address the goals of the GNWT as a whole while allowing departments sufficient flexibility to achieve their individual mandates.

The Vision

Informatics Policy Committee developed the following vision for the use of information technologies in the GNWT.

> *"Information technologies will support the effective and efficient delivery of government programs and services to Northerners and, within available resources, the benefits of information technology will be extended to the Northern public."*

Knowledge Management Strategy

The Principles

The following principles will be used as guidelines during implementation of knowledge management in the GNWT:

- Government-wide thinking, as well as the traditional department orientation, will be fostered and promoted
- Ownership and responsibility for systems projects and the management of information and knowledge will be clearly defined
- Partnerships between systems owners and information technology practitioners will be encouraged and fostered to ensure investments in systems and technology achieve the desired results
- Consistent and realistic technology standards will be defined and applied to facilitate system compatibility, service delivery and improved purchasing practices
- Robust cost management practices will be adopted and supported by a government-wide framework for identifying and capturing meaningful information regarding technology investments and expenditures
- Duplication of effort in the collection and processing of data will be reduced through the use of technology
- Building the capacity of GNWT employees' and Northerners' skills and knowledge by creating a learning orientation

Support for the GNWT Business Goals

The Knowledge Management Strategy supports the GNWT business goals as outlined in the document *Towards A Better Tomorrow*, in six key ways:

1. **Economic Development**

   The KMS supports the concept of leveraging the GNWT's IT needs in order to provide greater benefit for the NWT as a whole. As an example, the GNWT obtained wide-area network services through the private sector. The Digital Communications Network (DCN) services not only the GNWT, but also provides opportunities for NWT residents and businesses to become better connected. The intent of this initiative is to place the NWT in a stronger competitive position to attract and retain businesses and residents, and to foster an environment that results in economic prosperity.

Knowledge Management Strategy

By taking a broader and longer-term view of the government's IT needs, the North will benefit from development of a strong, private IT sector and the supporting technology infrastructure.

2. **Access and Capacity in Communities**

   Developing IT capabilities across the NWT enhances the ability of citizens to live and work in a global economy. Strategic implementation of technology offers improved access to the Internet and to electronic services for NWT residents and businesses. Citizens will be able to access information from the GNWT and other jurisdictions, and business owners will be able to reach out to the world with their messages.

3. **New Methods of Service Delivery**

   As residents gain access to the Internet, technology can enable new, cost effective and responsive means of delivering government programs and services (e-Government) to supplement existing modes of service delivery. The benefits of these developments flow both ways. The public benefits from improved access to government information and services. The government gains a new method of cost effectively delivering information and services to the public.

4. **Information Sharing and Decision Support**

   With an appropriate technology framework, information can be made available to frontline workers at the point of service delivery to improve the quality of service to the public. At the same time, information can be gathered at the point of service, summarized and presented in useful ways to support effective decision-making by program planners, managers, senior administrators and elected officials.

5. **Integrated Network**

   An integrated network allows people to access information via the network, whether they are in a government building in Yellowknife, in a community, or a home. It should not matter how people access government services. If one person prefers to walk into a government office, another to make a telephone call, and a third to dial into the Internet, they should all have access to the same types of information.

A strong commitment has been made by the GNWT to providing information to residents via television, radio, telephone, and computer. An integrated network will allow the GNWT to reach people and allow people to reach the GNWT.

6. **Sound Investments**

   Technology investments must be based on a solid understanding of requirements and cost/benefits. To maintain control over costs, a government-wide framework for identifying and capturing technology costs will be developed and implemented.

Much of the technology management work required to support the GNWT business goals helps build the foundation for successful implementation of knowledge management. In turn, as the technology management environment evolves and knowledge management is promoted within the GNWT, the improved flow of information and access to knowledge will assist the organization to achieve its business goals.

Knowledge Management Strategy

Challenges

Implementing a technology framework that will organize and enable information to flow freely across the government will not be without its share of obstacles. Effectively managing the IT resources and IT-related initiatives in the GNWT will require overcoming a number of challenges, some of which include:

1. **Gaining acceptance for the changes from a variety of stakeholders.** At present, departments have the latitude to make their IT investment decisions based solely on their individual requirements. While some departments have made significant progress, others feel they are just beginning. While introducing changes, it will be important to ensure progress continues for those departments that have already made advancements.

2. **Dealing with residual perceptions that establishing any type of government-wide approach is really a move to reduce departmental control**. Today, many organizations are taking an enterprise-wide approach to the management of common resources such as information and technology. Critical to the success of this approach is that roles and responsibilities are clearly delineated, including ownership of the information and knowledge by the department or agency with the mandate for delivering the program and service.

3. **Recognizing the realities of operating in the North.** Technology solutions, which have been successful in the South, are not always easily transportable to the North. For example, while it might make economic sense to have all servers located in Yellowknife, instead of in each individual community, the current network speed means that centralization of servers may in some cases decrease operational efficiency. Appropriate Northern solutions will be required.

4. **Not everyone is ready for an electronic world.** In some communities, having a telephone in each household would be a practical limit to technological advancement. Some citizens still want to walk into an office or telephone a government employee to access services. There will be some residents who will never want self-service. Technology initiatives must recognize the need to support both self-and assisted-service.

5. **Introducing knowledge management into an organization requires rigorous practices around what constitutes knowledge and how that knowledge is stored and made accessible.** At present, there is no consistent approach to managing knowledge in the GNWT, and not everyone believes that knowledge management should be a part of each person's daily activities. In order to successfully implement KM, a new mind-set will be required. Departments and agencies will be directly involved and responsible for the advancement of their own knowledge management initiatives, as well as contributing to those which are government-wide.

6. **Building a strong team of IT professionals within the GNWT who have the knowledge, skills and experience required now and in the future.** At present, the IT practitioners operate fairly independently; consistent selection criteria are not used when hiring these individuals; replacement plans do not exist for critical IT positions; retention of certain specialist skills is problematic; and cross-developmental opportunities to increase the expertise of existing IT staff have not been actively pursued. There is a need to build a strong team of IT professionals within the GNWT with the skills and expertise to support information technologies.

7. **Information and technology resources are not shared.** Information is not readily shared across departments and opportunities for joint funding and resource sharing are not rigorously pursued, with the result that there is considerable "reinventing of the wheel" and duplication.

8. **Networks are a large investment with high operating costs.** The GNWT Digital Communication Network (DCN) represents a large investment and has significant operating costs, but has been a huge benefit in supporting program delivery in communities. Utilization should be monitored and greater care must be taken in system design to ensure appropriate use of the network and minimize future costs.

Despite the challenges, many agree there are financial benefits and service improvements that can be achieved through better management of the technology infrastructure and knowledge management. Clear "go forward" plans are required, and a practical implementation approach is desired.

Knowledge Management Strategy

The Strategy

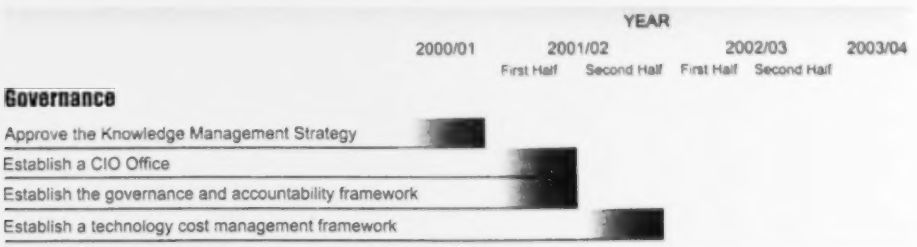
The Knowledge Management Strategy is a comprehensive and integrated set of initiatives to standardize and support the technology infrastructure, plan and manage systems projects and strengthen the use of information and the management of knowledge within the GNWT.

Six Key Projects

Implementation of the Knowledge Management Strategy will be achieved through the completion of six major projects. The projects are interrelated and will be undertaken concurrently over three years.

They are:

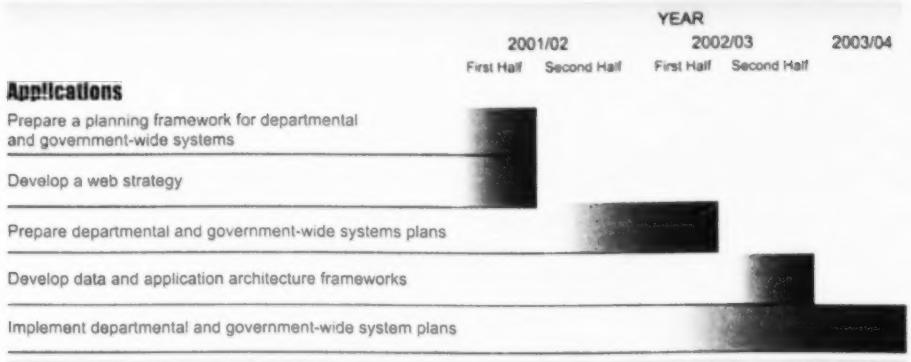
Project #1 – Governance
Outcome: A Knowledge Management accountability and cost management framework



Project 1 includes the establishment an Office of the Chief Information Officer, and a framework for governance and accountability. The governance project provides the management and accountability framework for the Knowledge Management Strategy and is particularly relevant to the introduction of new methods of service delivery and sound investments.

Knowledge Management Strategy

Project #2 – Applications
Outcome: Strong departmental and government-wide systems



The phases in project 2 are related to applications (or systems) and are the responsibility of owners of departmental and government-wide systems. The first phase is development of a web strategy because this is the "face" the GNWT presents to its public. To achieve the benefits of increased information sharing and a government-wide approach to knowledge management, a collaborative approach is necessary involving all system owners. The aim is to make the whole greater than the sum of its parts.

Planning for systems within the government is presently an independent process. There is no standard template for preparing plans and no means for system owners to communicate their plans. This project includes development of a planning framework for use by departments and government-wide system owners. Ideally this planning framework will be implemented for the 2002/03 budget planning cycle. The CIO Office will provide ongoing consulting support.

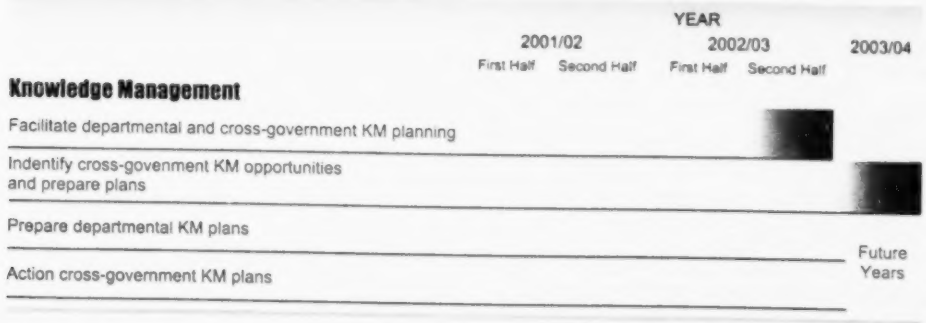
To enable computers to recognize like things, a great deal of effort is required to develop data and application architectures for use across the organization. The more consistent the data is, the greater the chances of being able to produce and share meaningful information. For example, if there is a standard way to record a person's name and address, to affix a date, or to identify a region, service delivery can be enhanced.

Some duplication can be eliminated and service can be faster because basic data does not have to be continually re-entered. When there is assurance that data and

information are accurate, risk is reduced particularly when that data is used to make decisions.

The phases related to the development of data and application architecture frameworks will involve the preparation of guidelines for departments to use in developing their architectures and systems plans.

Project #3 - Knowledge Management
Outcome: Integrated, cross-government plans for knowledge management



Project 3 identifies cross-government information sharing opportunities. Content owners have the responsibility for identifying knowledge management initiatives within their own areas of responsibility as well as cross-government.

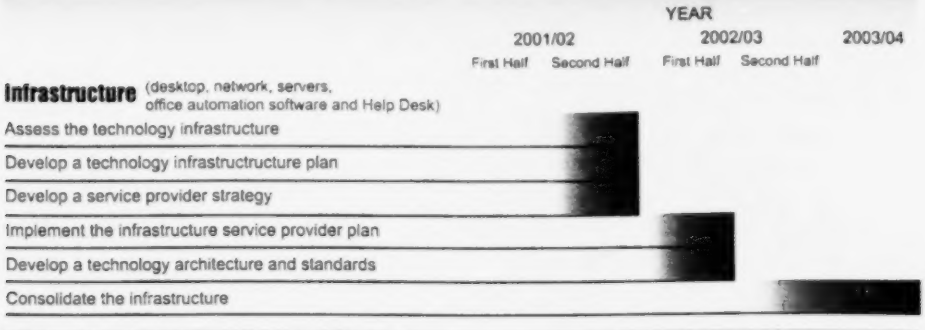
This project includes developing and distributing planning guidelines to departments and agencies. Facilitated, cross-government knowledge management planning sessions will take place to develop cross-government knowledge management plans. Departments can undertake similar activities in their own business areas as they implement knowledge management into their own operations. The Office of the CIO will be available in an advisory capacity. The desired outcomes are a workplace that encourages:

- Identifying mission-critical knowledge required in the GNWT in order to manage programs and resources
- Establishing the types of relationships required to build and sustain knowledge in the organization
- New approaches to the divestment of knowledge so that innovative practices can challenge the mindset of "we've always done it this way".

- Ensuring employees have easy access to the information they need for their daily work, are able to use information in value-adding activities, and can contribute knowledge back into the organization for others to use when they provide service or tackle problems.

Two guiding principles will govern the introduction of knowledge management. First there will always be a need to acquire knowledge through human interchange - people connecting with people. The second principle is that knowledge, which is an asset, will be deliberately managed using appropriate technologies to make knowledge management more efficient and effective.

Project #4 – Infrastructure
Outcome: A well supported, standardized technology infrastructure



Project 4 involves assessment of the technical infrastructure, and development of a strategy to upgrade it and provide appropriate service and support. In a technology environment, the infrastructure includes desktop computers, printers, networks, servers, and office automation software. The phases related to infrastructure will begin with a detailed assessment of the current technology infrastructure in the GNWT in order to identify any gaps between what is in place and what is required. A technology infrastructure plan will be developed which addresses the needs of the GNWT over the next 4 – 5 years.

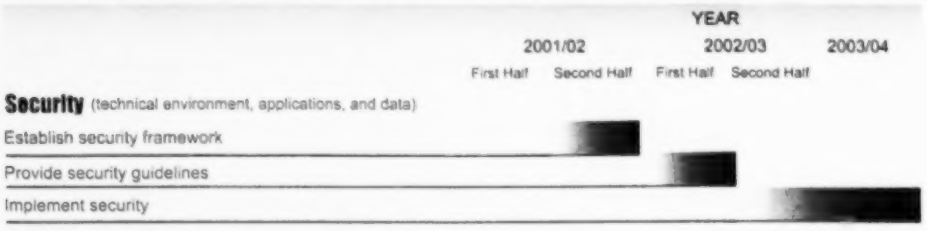
One of the main features of the technology infrastructure strategy is the establishment of a Technology Services Center (TSC) for the GNWT. This will involve a transition from the current, decentralized mode of operating and will lead to more integrated networks, improved access and capacity in the communities, and sound investments.

Knowledge Management Strategy

The Technology Services Center may be established internally or externally. Either way, the types of services offered will be specified and service agreements will be drawn up between the TSC and each customer.

Project #5 – Security

Outcome: A security framework and guidelines to protect the technology and knowledge assets and support the protection of privacy



Project 5 is the development and implementation of a security framework. Security applies to the complete technology environment, including the applications and data, the office automation tools, and the technology infrastructure. Security is only as good as the practices people follow in their everyday work. When security systems are implemented, they generally follow the framework established for the organization, be it government-wide or at the individual program level. To maintain IT security, GNWT employees will need to follow the procedures that apply to them. Typically these include:

- Changing passwords regularly and never sharing passwords
- Canceling user access when people are no longer employed by the GNWT
- Making sure people know the differences between public, confidential, and restricted records and that they identify and treat records in accordance with the security categories
- Providing orientation and refresher programs to GNWT employees regarding security procedures they are expected to follow
- Regular monitoring of security practices

It is important to start with establishment of a security framework. This will identify the system of controls for end-to-end security over information systems. It will assign responsibility for the various areas where security is required. Security guidelines will then be developed for technology service providers and system owners. The Office of the CIO and other designated groups should regularly monitor the implementation of security controls.

Project 6 – Evaluation

Outcome: Continuous improvement in the management of technology and knowledge

Toward the end of the three-year plan, it will be essential to assess the benefits realized from the various projects. Post-implementation reviews will be conducted for all major projects to assess results against expectations and plans, as well as to benefit from "lessons learned" for future projects. The results from each post-implementation review will be shared with the Project Sponsor, IPC, and other relevant stakeholders so any identified issues can be addressed in keeping with the principles of knowledge management. Significant results of post-implementation reviews will be summarized and shared with departments in order to capitalize on experiences.

Knowledge Management Strategy

First Steps

While the six key projects cover broad areas for action, it is imperative that the GNWT take direct and immediate action to demonstrate the commitment to knowledge management. With this as the focus, the GNWT has already begun to make changes by beginning to implement four first steps.

1. **Establish an Office of the Chief Information Officer (CIO)** to provide cross-government leadership in the management of the technology infrastructure, and the introduction of knowledge management.
    - Working closely with Deputy Ministers, the CIO can advise on the alignment of IT strategies
    - Support can be provided for presentations to elected officials
    - As Chairperson of the Information Technology Advisory Committee (ITAC), the CIO will seek input from IT practitioners on approaches for implementation
    - Users will be involved in the process since technology and knowledge management must support their operations

    A Chief Information Officer was named in June 2001 to implement the major projects necessary for the GNWT to achieve its knowledge management goals.

2. **Strengthen the Role of Departments** as the owners of content and managers of their information and knowledge. Under the Knowledge Management Strategy, Departments are responsible to:
    - Establish the technology operating framework for their systems, within GNWT accepted standards
    - Identify their requirements
    - Assess what they have and what is on the market in order to make "buy or build" decisions
    - Project manage their systems implementations
    - Provide user training
    - Ensure ongoing operation, maintenance, and upgrading of their systems

- Manage their records, in keeping with the GNWT records management framework
- Determine strategies for service delivery using technology to support either self- or assisted-service

3. **Clearly Assign Ownership** for government-wide systems to the department responsible for the function. Some government-wide systems are:

   - Financial Information System (FIS)
   - Payroll//Human Resources (PeopleSoft)
   - Records Information Management Systems (RIMS)
   - Capital Asset Accounting and Tracking System

   Opportunities for additional government-wide systems will be identified as the Knowledge Management Strategy is implemented.

4. **Establish a Technology Services Center** to cost effectively support the technology infrastructure. Consolidating the infrastructure support should result in a more integrated and connected environment, one where information sharing leads to KM realization. The TSC will be expected to:

   - Maintain government-wide standards and attain efficiencies in the installation and support of the technology infrastructure
   - Achieve savings by using the GNWT's volume purchasing power for hardware, office automation software, virus detection software and telecommunications equipment and services
   - Install hardware and current software versions on all desktops
   - Operate, support, maintain, upgrade, and dispose of technology components
   - Establish the operating framework for networks
   - Collaborate with their customers on all aspects of technology security management for the GNWT
   - Support department and government-wide system owners in their responsibilities for content management

Critical Success Factors

Successful implementation of knowledge management in the GNWT will be dependent on several critical factors. From a review of information gathered through the consultation process and from a review of the challenges noted previously, five critical success factors have been identified for implementation of the Knowledge Management Strategy.

1. **Leadership is Required.** Leadership for the government-wide, strategic direction for information technology and the introduction of knowledge management is critical and will be vested in the CIO Office.

2. **A Commitment to Knowledge Management and Cooperation Between Departments and Agencies is Essential.** Content owners will drive the value of information and knowledge to support service delivery in the GNWT. Departments and agencies must be committed to the strategic direction and be willing to cooperate. Deputy Ministers will provide executive level support.

3. **Employees Must be Involved in Knowledge Management.** Developing and using knowledge must be part of each person's work life. If the GNWT is to become an information and knowledge-driven organization, staff must be involved in knowledge management from the time they are hired into the GNWT.

4. **A Versatile Team of Information Technology Practitioners Must be in Place.** Information technology practitioners will be key to helping the organization move the knowledge management agenda forward. As emerging technologies continue to develop, a versatile team of IT practitioners must be in place to support the technologies the GNWT chooses to adopt.

5. **Significant Investment in Technology is Essential.** The need for and value of technology to enable the achievement of government and department goals must be recognized. Future investments must be based on the agreed strategic direction for information technology.

Knowledge Management Strategy

In Summary

A three-year plan has been developed for implementation of the GNWT Knowledge Management Strategy. This is an aggressive timeframe and will require the concerted efforts of all stakeholders to ensure the six projects are completed as scheduled. The following diagram summarizes the timelines.

Project Action Plan

There are many challenges ahead. With the co-operation of departments and agencies and the willingness of government staff to participate, implementation of the Knowledge Management Strategy will result in better information, more efficient systems, and improved service to clients at a manageable cost.

Informatics Policy Committee
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